OECD FELLOWSHIP REPORT

Fellow:	James Chamberlain, Ph.D.
Subject Title:	Integrating Nontimber Forest Products into a Forest-based Bioeconomy; Themes 1 and 3
Host Institution:	University of Copenhagen, Denmark
Host Collaborator:	Carsten Smith-Hall, Professor
Dates:	26 April – 7 June 2023
Consent:	Consent is granted

1. Objectives & Significance: The overall intention of the fellowship was to build on the work of the IUFRO Task Force to address issues that affect integration of nontimber forest products (e.g., food and medicine) into bioeconomies. To that prospect the six weeks focused on synthesizing findings and developing pathways to future research and development. Although the original approach was necessarily revised due to COVID, the scope was still similar: 1) document the extent that the products are included in bioeconomy strategies; 2) identify major challenges to integrating these products into bioeconomies, and; 3) elucidate major elements of frameworks to integrate FFM into bioeconomies.

The bioeconomy has emerged as the major strategic environmental economic movement of the 21st century. The motivation driving this was using biotechnology innovations to replace fossil fuels with biofuels, particularly wood and carbon, and alternative energy. The original motivation overlooked the tremendous contributions of forest food and medicine to economies and biodiversity. Ensuring and producing healthy and safe food are central to sustainable forest-based bioeconomies. Including forest plants, fungi and animals that are consumed as food and medicine will increase the value of forests, expand biodiversity conservation, and increase the proportion of society that benefit from sustainable forest management. Paths to a forest-based bioeconomy touch all levels -- consumers to producers -- of society. It is based on the sustainable and equitable sourcing of forest products, with little or no negative environmental impacts, and supported by strong science-based knowledge. This fellowship provided the opportunity to coalesced knowledge to provide insights of potential pathways for integration of forest products other than wood into forest-based bioeconomies. This has significant implications for development of this progressive economic movement.

The fundamental objectives of this fellowship were: 1) prepare manuscripts synthesizing the knowledge relative to nontimber forest products and bioeconomy and identifying gaps in that knowledge that require further research, and: 2) facilitate and coordinate global interactions within the scientific community on knowledge sharing relative to NTFP and bioeconomies through the IUFRO network.

3. Achievements: During the fellowship, major achievements were realized relative to the overall aim. Drafts of two manuscripts were prepared to the point that they are close to being submitted. While one focuses on the terminology used to describe the products and proposes an alternative typology, the other focuses on gaps in knowledge and moving forward on integration of NTFP into bioeconomies, specifically. Both advance knowledge in the field. In addition to the drafted manuscripts, we coordinated and facilitated development of task force activities with a vision for the World Congress in June 2024. Work is ongoing, although we made major progress on these fronts.

4. Follow-up: We are moving forward on two manuscripts, which should be ready for submission within months. One is focused on the journal “International Forestry Review”, while the other ‘Forest Policy and Economics.” The fellowship strengthened collaboration between the institutions. We envision more and

stronger collaboration, due in part to the fellowship. I envision no protected intellectual property because of the fellowship.

5. Importance of this research to society: An increasing number of countries are developing and implementing novel approaches to forest-based bioeconomies, focusing on a set of economic activities to grow, harvest, process, reuse, recycle, and sell forest products and associated ecosystem services. These developments have potential to rethink and reposition the forest sector in many countries, making it more relevant to key contemporary global challenges -- sustainably managing forests for biodiversity conservation, poverty alleviation, and climate change mitigation. Forest products other than wood contribute significantly to nations' economies, support poverty alleviation and are major elements to forest biodiversity. The concepts of bioeconomy and forest products need to expand for a fully functional forest-based bioeconomy that benefits a greater portion of society. Substantial evidence supports the contention that NTFPs contribute significantly to Nations' economies and have been doing so for a long time. Forest-dependent people, especially in the Global South, could benefit significantly by State recognition of NTFPs as part of bioeconomies with supported actions to integrate the products into associated programs. New and novel research and technology development opportunities are expected to account for the economic contributions, improvement of benefits and conservation of biodiversity in NTFP oriented forest-based bioeconomies. Achieving this will require concerted efforts by members of society that perceive the added benefits of including forest foods and medicine in economic planning.

6. Relevance to CRP: The fellowship was directly aligned with the aim of the CRP. Specifically, it associated with the objectives of Theme I – *Managing Natural Capital for the Future* and Theme III – *Transformational Technologies and Innovation* as it is focused on the 'growing demand' for 'products derived from biologically based feedstocks' and "the conservation and sustainable use of biodiversity for food and agriculture". It was innovative as the focus was on forests and trees as sources for food and medicine. The traditional approach to meeting food security and nutrition needs of the global population has led to global deforestation and extreme loss of biodiversity. Integrating forest plants harvested for food and medicine into a bioeconomy can increase biodiversity conservation and help meet food security and nutrition needs.

7. Satisfaction: I am extremely satisfied with the fellowship. I strongly recommend it to all colleagues. It was a wonderful opportunity that would not have been possible, otherwise. The fellowship will directly increase my career opportunities, especially with international colleagues.

My only recommendation would be to increase the level of financial support. I could not have completed the six weeks on the amount provided. The host institution (University of Copenhagen) was gracious and provided supplemental support.

8. Advertising: I learned about the program through my colleague at the University of Copenhagen. He suggested exploring this funding venue. The only issue I had with it was the unfamiliarity of the program within my own agency. Even though I was able to provide examples of the documentation needed, no one in my agency knew how to deal with it.